



## Increase your productivity Limit your costly downtime

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Decontamination of fluid processes and effluents  
Dehydration of hydraulic and dielectric fluids  
Means of control and measurement  
Analytical follow up of your fluids' pollution  
Endoscopy  
Pressure tests  
Chemical treatment



# Service and Specialties team



The service activity covers refinery, petrochemical, gas (production and transmission) and polymer industry sectors.

It allows you to:

— *Optimize a part of your maintenance with the audit, expertise, and counselling for the follow up on fluids and machines. Therefore, you will be able to prevent contamination of your fluids which can result in production loss and mechanical problems...*

— *Managing urgent non scheduled interventions such as production stoppage or machine breakdowns.*

— *Monitor your scheduled stoppage costs by preparing a maintenance and quality plan for each unit.*

**Each service is subject to a detailed study, before starting, which defines:**

- Operational data and process sketches
- Methods and types of treatment to be used
- Number of systems to be treated
- Requirements for energy and amenities on site
- Measuring and monitoring methods
- Detailed plan of decontamination operations.

## Our human resources

A team of more than 30 specialists in industrial servicing (marketing researchers, experienced site managers, technical teams).

## Our technical methods in conformity with applied standards:

- Liquid / liquid coalescer technology
- Liquid / gas coalescer technology
- Concentration units by ultrafiltration or reverse osmosis
- Particle filtration skid
- Automatic particle meters
- Kari Fischer water measurement
- Units for oil dehydration by vacuum evaporation

With storage tanks (from 1000 to 3000 litres), purging skids, acceleration pumps, flexible connections and linking network, containers, offices, mobile laboratories and on site analysis methods.

This structure easily allows provision of complete or partial servicing.



## Decontamination of fluid processes / effluents

**Pall** offers unique services in terms of particulate and submicronic filtration technologies, as well as separation of liquid/liquid, liquid/gas, ultrafiltration, nanofiltration and reverse osmosis.

## Underground network water treatment

**Pall** offers a complete range of compact modular units. These allow total elimination of particulates and micro-organisms present in the water.

## Elimination of solid contaminants

**Pall** offers economic solutions for fluid purification for a wide range of solid concentrations, ranging from several ppm to high percentages. For this purpose, disposable products (cartridges, discs); regenerable products (baskets, metallic elements); and even automatic systems are used.

## Separation of an aqueous phase from a hydrocarbon fluid and of a hydrocarbon phase from an aqueous fluid.

**Pall** offers its liquid/liquid coalescer technology, which allows us to reach the limit of solubility of one phase in another.

## Elimination of liquid aerosols in a gas

**Pall** has developed liquid/gas coalescer elements that allow protection of the equipment and/or evaluation of liquids.

## Purification/concentration of effluents

**Pall** offers ultrafiltration, nanofiltration and reverse osmosis technologies.



# Services

## Analytical follow up of your fluids's pollution

The presence of contaminants (solid, liquid, gels, gums...) in fluids may result in their irreversible pollution or damage to your machines and equipment. Therefore, it is imperative to identify, isolate and control pollution as soon as possible. Pall has more than 50 years experience in the analysis and control of contamination, and offers a wide variety of services and technical support.



## Dehydration of hydraulic fluids

Water is a very common contaminant in hydraulic and lubrication systems. It can penetrate into systems after condensation of the air, due to bad weatherproofing or through the breather of the reservoir. Defective heat exchangers, penetration of water jackets or addition of already contaminated oil are also common causes for pollution. The main consequences of water presence in the oil are:

- Deterioration of the fluid, which may lead to precipitation of the additives and oil oxidation
- Acceleration of wear phenomena
- Development of harmful micro organisms
- Decrease of the lubricant film thickness
- Corrosion
- Blockage of machine components by ice at low temperatures.

## Purification of hydraulic fluids

Oleo hydraulic decontamination is carried out by high-speed circulation in the different hydraulic systems. Thanks to their filtration efficiency, the decontamination skids in use, whose flow may reach thousands of l/min, guarantee better results. A permanent control of pollution evolution is conducted on premises through sample fluid taking, according to AFNOR E 48650 or ISO 4021 Standards. These samples go through analysis in our laboratory, which is set up on premises during all your consultation. The following analyses are made:

- Particle metering (AFNOR NFE 48658 Standard)
- Measurement of water content (AFNOR NFT 60154 Standard)
- Measurement of filterability (PALL BENSCH Method or AFNOR E 48690)
- Microscope quantitative analysis (NFE 48651 Standard).

*Pall Fluid purifier allows elimination of water, solid particles, air and other gases present in hydraulic, lubricant and dielectric\* fluids. The operation is based on mass transfer by partial vacuum evaporation.*



*The results obtained are submitted as a summary and later joined to the complete report of the site's closure.*

(\*) Given that the standards required to reach a good functioning of materials such as transformers are from 20 ppm to 50°C, deep treatment of these fluids is essential. The consequences of water presence in these oils are loss of dielectrical rigidity, deterioration of actives parts, increase in acidity and breakdown.

## Audit

Pall markets a wide range of media, materials and automated systems for fluid purification and separation. Our experts offer audits for optimizing and development of your processes as well as for reduction of your filtration costs. A detailed report follows each audit.

Pall also provides other services that might require the installation of different types of separation equipment.

## Chemical treatment

Pall Fuels & Chemicals uses different processes for cleaning, purging, neutralizing and passivating, by circulation through pipe systems. Installation of temporary fluid loops and all necessary checks are conducted on the premises (chemical analysis of immersed products in terms of evolution of iron content, free acidity and pH). Nitrogen drying is carried out at the end of the treatment, along with monitoring of the amount of water vapor in the nitrogen.

## Pressure Tests

Pressure tests are conducted with test equipment that allows testing of pipe systems. Recordings of pressure and temperature are done on a regular basis on each pipe being tested.

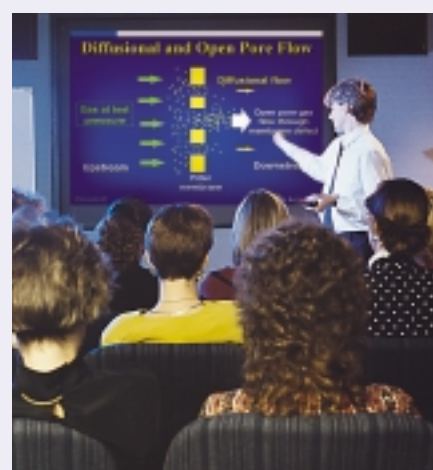
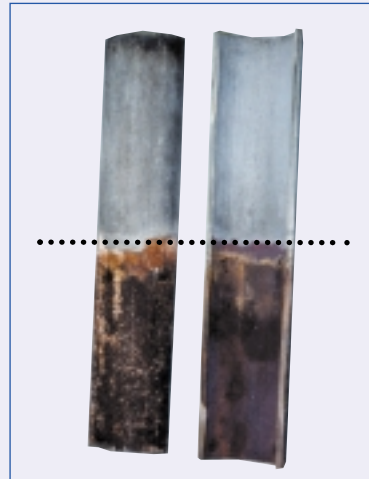
## Endoscopy

Endoscopy allows the evaluation of the condition of pipes that need to be cleaned, in order to install all related technical means.

## Training

We offer user-adapted training to all, from operators to managers. Training provides each individual with an optimal knowledge of separation and filtration techniques. Industrial filtration experts, experienced in production processes and their main separation stages provide training on site or at a Pall training centre.

**The training program is personalized according to your needs.**  
*Training fees are invoiced through your in-service training scheme.*



# Our References

## Refinery sector

### TOTAL – France

Particle purification and decontamination of a turbo alternator oil charge.

### TOTAL – France

Particle and water removal from the compressor oil charges.

### TOTAL – France

Cleansing of hydraulic reservoirs and static particle purification of hydraulic charges.

Dynamic decontamination and super rinsing of lubrication installations.

### TOTAL – France

Solid particle purification and decontamination of 30 m<sup>3</sup> of oil from the filling pipes.

### EXXONMOBIL – FRANCE

Dehydration of lubrication oil.

## Off-shore oil platform sector

### OIL PLATFORM

- Pressure tests and hydraulic oil decontamination of the entire "Piping and Instrumentation" Systems.

### OIL PLATFORM

- Hydraulic decontamination of the two stations in line with production module "NKF1 & NKF2". Pressure tests, hydraulic decontamination, chemical and hydraulic decontamination of "gas" compressors.

### OIL PLATFORM

- Pressure tests, classification of cleanliness level and drying.

### OIL PLATFORM

- Classification of cleanliness level of gas compressors.

### OIL PLATFORM

- Pressure tests

## Chemical Plant

### GRANDE PAROISSE – France

- Solid particle purification of the hydraulic charge of a turbo compressor.

### ATOFINA – FRANCE

- Chemical purification, purging and passivation of fuel gas supply systems.

## Gas sector

### GAZ DE FRANCE – France

- Particulate decontamination of the hydraulic systems and rinsing of the well head pipes.
- Particulate decontamination of the glycol and amine loops for drying and desulphurization of stock gas.

## Turning machines

- Compressors: SOLAR, THERMODYN, NUOVO PIGNON, DRESSER, ALSTOM, MAN TURBO
- Concerned circuits: aero refrigerant, lubrication, reservoirs.

France – Hungary – Spain – Scotland – Italy.



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